

WHAT IS CLAIMED IS:

1. A method of identifying a compound that stabilizes an α -helical conformation of a discordant helix in a polypeptide, the method comprising:

(a) providing a test sample comprising a polypeptide that contains a discordant helix
5 in the form of an α -helix;

(b) contacting the test sample with a test compound; and

(c) determining the rate of decrease in the amount of α -helix in the test sample,
wherein a lower rate of decrease in the presence of the test compound than in the
absence of the test compound is an indication that the test compound stabilizes the α -helical
10 conformation of the discordant helix in the polypeptide.

2. A method of identifying a compound that can stabilize the α -helical conformation
of a discordant helix-containing polypeptide, the method comprising:

a) providing a test sample comprising a polypeptide that contains a discordant helix
15 in the form of an α -helix;

b) contacting the test sample with a test compound; and

c) determining the amount of α -helix present in the test sample,
wherein a higher amount of α -helix remaining in the presence of the test compound
than in the absence of the compound indicates that the test compound stabilizes the α -helical
20 conformation of the discordant helix in the polypeptide.

3. A compound identified by the method of claim 1.

4. A compound identified by the method of claim 2.

5. A method of identifying whether a protein is susceptible to forming amyloid, the
method comprising analyzing the amino acid sequence of the protein to determine whether
the protein contains a predicted discordant helix, wherein the presence of predicted
discordant helix is an indication that the protein is susceptible to forming amyloid.

6. The method of claim 5, wherein the discordant helix is at least six amino acids in length.

5 7. A method of decreasing the rate of formation of β -strand structures between at least two discordant helix-containing polypeptides, the method comprising contacting the discordant helix-containing polypeptides with a compound that stabilizes an α -helical form of the discordant helix.

10 8. A method of treating an individual having or at risk for an amyloidosis, the method comprising administering to the individual a therapeutically effective amount of a compound that stabilizes an α -helical form of a discordant helix-containing polypeptide that forms amyloid.

15 9. The method of claim 8, wherein the amyloidosis is selected from the group consisting of prion diseases and Alzheimer's disease.